

CLAIMS

1. Catheter in particular for endovascular applications, of the kind comprising a long and flexible, hollow, tubular body (1) having an insertion
5 end (4) and a connection end (3) intended to remain outside the body, as well as, in the insertion end (4), at least two elements (9, 12) which are expandable/contractible by means of external operation and which are located at a distance from each other such as to be able to operate one upstream and the other downstream of a given section of a vessel, said
10 expandable/contractible elements (9, 12) being adapted and/or being able to be adapted, with regard to their diameters in the expanded condition, to the diameters of the vessels (10, 210) inside which they are intended to be positioned, so as to block temporarily the circulation inside said vessel section,

15 characterised in that the two elements (9, 12) located at the insertion end (4) are inflatable/deflatable by means of supplying and discharge ducts (6,8) which are provided inside the thickness of the catheter wall.

2. Catheter according to Claim 1, characterized in that it has a tubular shape (1) with a first larger diameter, provided on the outside with a first element
20 (9) which is inflatable/deflatable by means of one (6) of the ducts provided in the thickness of the wall, whereas at least one other of the ducts (8) inside the thickness of the wall extends, after a certain length, into an extension (11) having a smaller diameter, substantially of the order of magnitude of the duct (8) and terminates in a second inflatable/deflatable element (12).

25 3. Catheter according to claim 1 or 2, characterised in that it comprises at least one additional duct (7) for a guide wire in the thickness of the wall, which emerges on the end side of the most distal end of the entire catheter, i.e. the distal end of the smaller-diameter extension (11).

30 4. Catheter according to claim 2, characterised in that said conduct (7) for the guide wire extends only in the distal portion of the catheter and has an opening (21) located between the inflatable/deflatable elements (9) and (12).

5. Catheter according to one or more of the preceding claims, characterized in that it has an additional central duct (2) for conveying treatment means (15, 16) necessary for operating in the vessel section affected by stenosis.

5 6. Catheter according to one or more of the preceding claims, characterized in that the length of the section comprised between the two inflatable/deflatable elements (9, 12) is generally of the order of a few centimetres to about 10 cm, substantially equivalent, for example, to the stenosis (14) of arterial vessels (110, 210) or the like or the length necessary
10 for occluding a vascular trunk and an arterial bifurcation branch thereof, blocking the blood flow in the second branch.

7. Catheter according to one or more of the preceding claims, characterized in that the first greater external diameter is of the order of magnitude of 12 - 13 French (about 3.9 mm), preferably not greater than 14 French
15 (4.2 mm) while the second smaller diameter is of the order of magnitude of 5 French (about 1.5 mm).

8. Catheter according to one or more of the preceding claims, characterized in that the connection end (3) has an end-piece (5) which is intended to remain outside the patient's body, which end-piece (5) is provided with
20 tubular connection elements (13) connected to the individual ducts (6, 7 and 8).

9. Catheter according to one or more of the preceding claims, characterized in that a catheter according to one or more of Claims 1 to 8 is used to block the flow, towards the brain, of the internal carotid artery, inside which the
25 stenosis (14) is present.

10. Use of a catheter according to Claims 1 - 9, comprising the following steps:

- insertion of the catheter inside the carotid artery via the femoral artery;
- positioning of the catheter so that the end of the smaller-diameter
30 extension (11) is arranged, with respect to the direction of the blood flow, in the external carotid (210) and the larger-diameter end is arranged inside the

common carotid (10);

- inflation of the two expandable/contractible elements (9, 12) via the two respective ducts (6, 8) provided in the thickness of the catheter wall;

5 - operation on the stenosis of the internal carotid via insertion of the appropriate treatment instruments (15, 16) through the central duct (2);

- aspiration through the central duct 2 of possible residues deriving from catheter expansion;

10 - deflation of the two expandable/contractible elements via the two respective ducts (6, 8) provided in the thickness of the catheter wall;

- final monitoring and extraction of the catheter and the guide wire.

11. Catheter according to any one of the previous claims, characterized in that said tubular body (1) and said extension (11) have a different flexibility.

15 12. Catheter according to claim 1, wherein the balloons 9, 10, when not inflated, are comprised within the profile of the catheter section onto which they are fitted.